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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,522	02/15/2002	Yong Ma	270/205	3498

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EXAMINER

JACKSON, CORNELIUS H

ART UNIT PAPER NUMBER

2828

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

10/077,522

Applicant(s)

MA, YONG

Examiner

Cornelius H. Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Acknowledgment***

1. Acknowledgment is made that applicant's Amendment, filed on 16 June 2003, has been entered. Upon entrance of the Amendment, claims 1, 2, 4 and 7 were amended and claims 21-29 were added. Claims 1-29 are now pending in the current application.

### ***Specification***

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 1 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the laser diode and the wavelength selective external cavity. It is unclear as to what optically couples the two elements, since any type of light traveling from one element to the other may form optical coupling. Also it is unclear as to which portion of the wavelength selective external cavity is directly optically coupled the laser diode or what optically couples the waveguides with the resonator. Claims 2-22 and 24-29 are rejected for depending on an indefinite base claim.

6. Claims 2 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: how the first and second waveguides are coupled to the resonator. Since the claims fail to specify an origin to which vertical and/or horizontal can be viewed, it is unclear as to what is the vertical and/or horizontal direction. Claims 3-6 and 8 are rejected for depending on an indefinite base claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 2, 7, 19-21 and 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Grubb et al. (6344925). Regarding claim 1, Grubb et al. disclose a wavelength tunable laser **Fig. 6a** comprising a laser diode **47** and a wavelength selective external cavity **52** optically coupled to the laser diode **47**, the external cavity including a resonator **48** having a tunable resonance wavelength and formed from electro-optic material, first **50<sub>i3-4</sub>** and second **50<sub>o3-4</sub>** waveguides optically coupled to the resonator **48**, and a reflector **54<sub>H</sub>** optically coupled to the second waveguide **50<sub>o4</sub>**, see **col. 3, lines 23-26, col. 4, line 61-col. 5, line 15, col. 6, lines 27-35 and col. 7, line 50-col. 8, line 2.**

Regarding claims 21 and 23, Grubb et al. disclose all the stated limitations, see **Fig. 6a, col. 3, lines 23-26.**

Regarding claims 2, 7, 19, 20, 24 and 25, Grubb et al. disclose all the stated limitations, see **Fig. 6a, col. 3, lines 23-26, col. 4, line 61-col. 5, line 15, col. 6, lines 27-35 and col. 7, line 50-col. 8, line 2.**

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3-6, 8-18, 22 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grubb et al. (6344925) in view of Ho (6009115). Grubb et al., as applied to claims 1, 2, 7, 19-21 and 23-25 above, teach all the stated limitations, except for the first **50<sub>13-4</sub>** and second **50<sub>03-4</sub>** waveguides and the resonator **48** are formed on a single substrate comprising a plurality of layers. Regarding claims 3 and 26, Ho teaches the first **14** and second **16** waveguides and the resonator **12** are formed on a single substrate comprising a plurality of layers, **see col. 4, line 62-col. 5, line 25 and col. 10, line 47- col. 11, line 7**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to place all the elements of the wavelength tunable laser on a single substrate to keep the arrangement constant, to form an on-chip integration with other semiconductor devices and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claims 4 and 8, Ho teaches a separation layer, **see col.4, lines 28-41.**

Regarding claims 5, 6 and 27-29, Ho teaches how the waveguides are formed, **see col. 8, line 33-col. 9, line 25.** Also, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 9, Ho teaches the resonator comprises a plurality of resonators, **see Fig. 9.**

Regarding claim 10, Ho teaches the position of the lens, **see Fig. 10 and col. 6, lines 54-60.**

Regarding claim 11, Grubb et al. teach the all stated limitations, **see Fig. 6a.**

Regarding claim 12, Grubb et al. and Ho teach all the stated limitations, **see rejection to claim 3 above.**

Regarding claim 13, Grubb et al. teach the all stated limitations, **see col. 8, lines 15-21.**

Regarding claim 14, Ho teaches all the stated limitations, **see rejection to claim 10 above.**

Regarding claim 15, It would have been an obvious matter of design choice to place a reflective coating a the end facet of the waveguide, since applicant has not disclosed that the coating solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a reflective mirror.

Regarding claims 16 and 17, Ho teaches all the stated limitations, **see col. 9, lines 34-52.**

Regarding claim 18, Grubb et al. teach the all stated limitations, **see col. 8, lines 35-48.**

***Response to Arguments***

11. Applicant's arguments filed 16 June 2003 have been fully considered but they are not persuasive.

Applicant arguments are follows:

a. Grubb fails to disclose a resonator having tunable resonance wavelength and formed from electro-optic material.

b. The claimed resonator provides the laser of the invention with selectivity by tuning its resonance wavelength.

c. The claims are not rendered obvious by the combination of Grubb and Ho since one skilled in the art would not think to replace the fiber ring based system of Grubb with the semiconductor based microcavity resonator system of Ho.

Examiner reply to applicant's arguments are as follows:

a. Grubb does teach a resonator having tunable resonance wavelength and formed from electro-optic material, **see col. 3, lines 23-26 and col. 6, line 65-col. 8, line 48.**

b. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., The resonator *provides the laser with selectivity by tuning its resonance wavelength*) are not recited in the rejected claim(s). Although the claims are interpreted



in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

c. One skilled in the art would think to replace the fiber ring based system of Grubb with the semiconductor based microcavity resonator system of Ho, since Grubb teach that the system maybe of a semiconductor based material, **see col. 3, lines 23-26 and col. 6, line 65-col. 7, line 11.**

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Little et al. (6052495), Carruthers et al. (5574739), Bernard et al. (5004342), Po (4852117) and Hicks, Jr. (4720160) all disclose inventions similar to that of Applicant's claimed invention.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (703) 306-5981. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.



chj  
August 24, 2003

  
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